

'Sex-testing' regulations flawed and should be withdrawn: experts

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Researchers at King's College London say 'sex-testing' policies introduced for athletes in time for the London Olympic Games this summer are significantly flawed and should be withdrawn. They say singling out hyperandrogenism in women from all other biological anomalies could discriminate against women who may not meet traditional notions of femininity and distort the scientific evidence on the relationship between testosterone, sex and athletic performance.

In a paper published today in the *American Journal of Bioethics*, experts say new regulations introduced by the International Association of Athletics Federation (IAAF) and the International Olympics Committee (IOC), stipulating that high levels of endogenous (naturally occurring) [testosterone](#) in women (hyperandrogenism) create an unfair advantage, are based on disputable scientific assumptions and are 'unfair'.

Hyperandrogenism is a condition in which women produce androgens in excess of the range typical for females. Although both males and females have androgens, women typically have about one tenth the level of males. The IAAF and IOC policies around sex-testing have been re-introduced following the case of elite athlete Caster Semenya, whose sex was challenged in 2009 after her spectacular win and powerful physique, leading to questions around the legitimacy of her competing as a female.

However, Dr. Camporesi from the Centre for the Humanities and Health at King's and co-author of the report, says that hyperandrogenism in women should be viewed no differently from other biological advantages that are frequently found in groups of [elite athletes](#) and that, in fact, higher levels of testosterone do not automatically confer athletic advantage.

The paper draws on other examples of biological advantages in athletes derived from atypical conditions, such as runners and cyclists with rare mitochondrial variations that give them extraordinary aerobic capacity and exceptional resistance against fatigue; basketball players who have acromegaly, a hormonal condition that results in exceptionally large hands and feet, and the speculation that Michael Phelps, the record-breaking Olympic swimmer, has Marfan's Syndrome - a rare genetic mutation that results in unusually long limbs and flexible joints.

The new policies rest on the notion that the difference in athletic performance between males and females is predominantly due to 'higher levels of androgenic hormones in males resulting in increased strength and muscle development'. One of the biggest gaps in the current data is that nearly all research has been conducted in men. Dr. Camporesi said: 'Surprising as it may be, the link between athleticism and androgens in general, or testosterone in particular, has not been proven'.

The report authors say that there is no persuasive evidence that

successful athletes have higher testosterone levels than less successful ones. Levels of endogenous testosterone vary in women by day, time of the month, time of life and are also affected by interactions with the environment, for example winning or losing a competition can stimulate a rise or drop in testosterone.

Dr. Camporesi added: ‘Even if it were proved - and it is not, as we show in the report - that there is an athletic advantage derived from higher levels of endogenous testosterone, it would not be an unfair one. Elite athletes already display many types of biological and genetic advantages, why single out testosterone? Hyperandrogenism is a naturally occurring phenomenon and therefore no different to any other exceptional biological variation in the human body’.

Furthermore, the authors say, there is insufficient data to set a benchmark for normal testosterone levels in elite athletes and that isolating testosterone levels alone as a marker of eligibility to compete is problematic. Dr Camporesi said: ‘There is no one indicator in the body to specify that a person is male or female. In particular, despite a general framework around the levels of testosterone in men and women, there are no hard and fast numerical guidelines. The new policies introduced by the IAAF and the IOC try to get around the complexity of what determines athletic excellence by singling out testosterone levels as the most important aspect of athletic advantage. But athletic advantage is the product of a complex entanglement of biological and material factors and cannot be reduced to [testosterone levels](#).’

The researchers warn that the new policies are particularly worrisome as they could lead to female athletes being coerced into unnecessary and potentially harmful medical treatment in order to continue competing.

Dr. Camporesi said: ‘Unlike doping, women with hyperandrogenism have not introduced any foreign matter into their bodies. Yet, under the

new policies, if a woman with hyperandrogenism wants to compete, she must undergo ‘treatment’. In doing so the new policies deprive female athletes with hyperandrogenism of competing as elite athletes in their own right and the opportunity to test their capabilities and limits on the track-field, which is the very essence of sport and competition. Not only do the new policies fail to achieve the fairness they claim to be constructed on, but they end up achieving quite the opposite, and this is why they should be withdrawn.’

Provided by King's College London

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